

WHAT IS CLAIMED IS:

1. A device for adding and dropping optical signals comprising:

an optical signal provided at an end unit of a free space wherein optical signals proceed in the device, for injecting/transmitting optical signals corresponding to multi-wavelengths, and adding/dropping optical signals corresponding to predetermined wavelengths;

5 a bulk dielectric optical thin film provided in the free space, for reflecting or transmitting the optical signals corresponding to the predetermined wavelengths from among the multi-wavelengths injected/added by the optical signal processor, transmitting or reflecting the optical signals corresponding to other wavelengths to add and drop the optical signals corresponding to the predetermined wavelengths;

10 first and second focusing lenses for focusing the optical signals injected/added by the optical signal processor to allow them to proceed to the bulk dielectric optical thin film, focusing the optical signals passed through the bulk dielectric optical thin film to drop/transmit them to the optical signal processor; and

15 first and second collimating lenses respectively provided between the bulk dielectric optical thin film and the first focusing lens, and between the bulk dielectric optical thin film and the second focusing lens, for allowing the optical signals focused at the first and second focusing lenses to proceed in parallel, and be provided to the bulk dielectric optical thin film, and collimating the signals passed through the bulk dielectric optical thin film to allow the signals to proceed to the focusing lenses.

2. The device of claim 1, wherein the optical signal processor comprises:

input/drop optical fibers including an input optical fiber for receiving multi-wavelength optical signals, and a drop optical fiber for dropping the optical
5 signals corresponding to predetermined wavelengths; and

add/output optical fibers including an add optical fiber for adding optical signals corresponding to predetermined wavelengths, and an output optical fiber for outputting the optical signals transmitted through the added optical fiber and the bulk dielectric optical thin film.

10 3. The device of claim 2, wherein the input/drop optical fibers and the add/output optical fibers form a dual fiber termination on an object plane, respectively.

15 4. The device of claim 1, wherein the first and second focusing lenses respectively match the dual fiber termination on the object plane with individual focuses on an image plane, and vary the distance between the two focusing lenses between the image plane and the object plane.

5. The device of claim 1, wherein the first focusing lens forms an object plane at the dual fiber termination of the input/drop optical fiber, and
20 the second focusing lens forms an object plane at the dual fiber termination of the add/output optical fiber.

6. The device of claim 5, wherein the first and second focusing lenses define the object plane and the image plane.

7. The device of claim 2, wherein the first collimating lens provides in parallel the injected multi-wavelength optical signals from the input/optical fiber

to the bulk dielectric optical thin film through the first focusing lens, and allows the optical signals reflected by the bulk dielectric optical thin film to be transmitted in the reverse direction of the incidence direction and be focused at a predetermined point on the image plane, and

5 the second collimating lens provides in parallel the added optical signals from the add optical fiber to the bulk dielectric optical thin film through the second focusing lens, and allows the optical signals reflected by the bulk dielectric optical thin film to be focused at a predetermined point on the image plane.